

Implementing a Torque Check

Sets the torque control time-out period on axis 3 to 2.5 seconds.

PSHTIME(3)=2500

Sets the maximum torque value to 25% of rated torque and move axis 3 from the current position to the point specified by P1 (pushing action).

PUSH(3,P1),F=25

Checks if time-out is up.

IF PSHRSLT(3)=1 THEN

Time-out is up (pushing is complete).

(Result is internal memory to MO(21) in this example.)

MO(21)=1

ELSE

Time-out is not yet up. (Reached target position but failed to complete pushing.)

(Result is internal memory to MO(21) in this example.)

MO(21)=0

ENDIF

Returns the maximum torque instruction to original value (100%).

PSHFRC(3)=100

Ends the torque limit and torque control, and moves to P0.

DRIVE(3,P0)

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4 Initialize Program
5 ARCHP1 15000 'Round the Corners
6 ARCHP2 15000 'Round the Corners
7 MOVE P, P0 'Move Robot to Home Position
8 RESET MO2() 'reset flag bits
9 RESET DO2() 'reset alarm bits
10
11 '*****
12 'Start Main Loop
13 *Top:
14 WAIT DI(20) = 1 'Wait for PLC Start Signal
15 SET DO(21) 'Send Busy Signal to PLC
16 MOVE P, P1 'Move Robot Above Pick Position
17 FOR Count% = 1 TO 4 'Do Pick and Place 4 Times
18     MOVE P, P2, A3=0.00 'Arch Move Robot Dn Pick Position
19     GOSUB *Close_Gripper 'Close Gripper
20     MOVE P, P4, A3=0.00 'Arch Move Robot just Above Place
21     GOSUB *Insert_Part 'Call Insert
22     GOSUB *Reject_Check 'Check if part jammed and recover
23 NEXT Count% 'Increment For/Next Loop Counter
24 MOVE P, P1, A3=0.00 'Move Robot Above Pick Position
25 RESET DO(21) 'Turn off Busy Signal to PLC
26 GOTO *Top 'Return to Top of Loop
27
28 '*****
29 'Sub Routines
30 *Close_Gripper:
31 SET DO(20) 'Close Part Gripper
32 DELAY 500 'Delay / Wait for Gripper to Close
33 RETURN
34
35 *Open_Gripper:
36 RESET DO(20) 'Open Part Gripper
37 DELAY 500 'Delay / Wait for Gripper to Open
38 RETURN
39
40 *Insert_Part:
41 SPEED 50 'changed global speed to 50%
42 PSHTIME(3)=2000 'torque is held 2secs before moving away
43 PUSH(3,P5),F=25 'move down torque controlled
44 IF PSRSLT(3)=1 THEN
45     MO(20)=1 'set the jammed flag bit
46 ELSE
47     MO(20)=0 'not jammed? reset flag bit
48 ENDIF
49 SPEED 100 'restore global speed to 100%
50 PSHFRC(3)=100 'restore torque to 100%
51 RETURN
52
53 *Reject_Check:
54 IF MO(20)=1 THEN
55     DRIVE(3,0.00) 'Retract Z holding part
56     MOVE P, P6 'Move to Reject position
57     GOSUB *Open_Gripper 'Open Gripper
58     SET DO(22) 'Turn on alarm bit
59     Count% = 4 'Update For Loop count
60 ELSE
61     GOSUB *Open_Gripper 'Open Gripper / Normal
62 ENDIF
63 RETURN

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